ACCESSION NR: AT4015862 S/2573/63/000/009/0226/0233

AUTHOR: Cherny*shev, V. Ye.; Shiro, G. E.

TITLE: An automatic telemetering system with FM transducers

SOURCE: AN SSSR. Institut elektromekhaniki. Sbornik rabot po voprosam elektromekhaniki, no. 9, 1963. Avtomatizatsiya, telemekhanizatsiya i priborostroyeniye (Automation, telemechanization and instrument manufacture), 226-233

TOPIC TAGS: transducer, telemeter, system telemetry, data transmission, data monitoring, monitoring sensor, transmission system, meteorology, commutator, sensor, transducer sensitivity, pulse counter, generator

ABSTRACT: A telemetering system which is required to monitor and transmit data from many sources is most economical when many monitoring sensors are used in connection with one measuring and transmitting system. A block diagram of such a system is shown in Figure 1 of the Enclosure. The majority of sensors used in meterology have transducers whose output electrical signal is varied either by voltage or impedance. These quantities are difficult to convert to digital form and usually require a physically moving commutator. When the sensor output is varied by frequency, proportional to the input variable, the reliability of the system increases since no moving contacts are required.

Card 1/5

ACCESSION NR: AT4015862

The FM transducers available are mostly nonlinear for the range

$$\frac{\Delta f_p}{f_{max}} \leqslant 0.2 f_{max} \qquad (1)$$

where Δf_p is the operating frequency deviation of the sensor. Most non-linearities are of the form $f = k \sqrt{x}$. A compensation for the non-linear characteristic of the transducer element consists of multiplying the transducer output by a piecewise-linear approximation of the inverse of this non-linearity, so as to make the output of the measuring system of Figure 1 of the Enclosure directly proportional to the input variable. The block diagram of the measuring system is shown in Figure 2 of the Enclosure. The measurement is performed in two steps: determination of the number of the linearization segment and actual measurement with correction for non-linearity. For any element K, the timing system supplies a pulse which opens Gates 1 and 2. At the same time the inputs of two pulse counters are supplied with pulses at frequencies f_{rg} (reference generator) and f_k. When counter 1 is filled, it generates a pulse which closes both gates and signals the timing circuit that the first measuring stage is completed. The timing circuit forms a series of pulses required to read out from counter 2 a number which corresponds to the number of

Card 2/5

ACCESSION NR: AT4015862

the linearization segment. This number is used to select proper linearization constants (slope and intercept) from the block of constants in accordance with the number of the sensor element and the number of the linearization sector as recorded in both counters. As a result the counter 2 output gives a digital number N_K which corresponds to the magnitude of the measured variable in physical units. The block of constants is the most complex part of the system. A simple realization is given using ferrite-diode elements and the current distribution principle. The signal-to-noise ratio of the block is from 50 to 200. The system is capable of handling up to 40 sensors with a measurement accuracy of 0.2%. Orig. art. has: 7 formulas and 3 figures.

ASSOCIATION: Institut elektromekhaniki AN SSSR (Institute of Electromechanics AN SSSR)

SUBMITTED: 00 DATE ACQ: 20Dec63 ENCL: 02

SUB CODE: EC NO REF SOV: 004 OTHER: 000

Card 3/5

ACCESSION NR: AT4015862

ENCLOSURE: 01

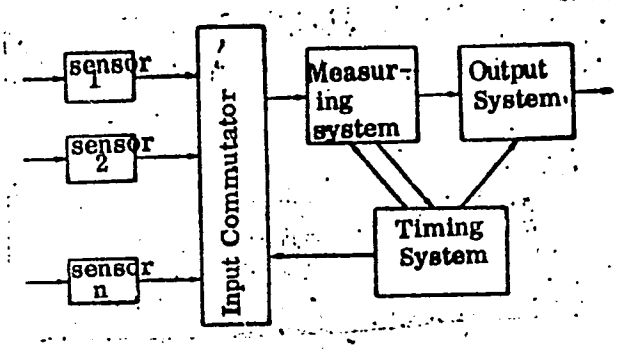


Fig. 1 - Block diagram of the Telemetering System.

Card 4/5

ACCESSION NR: AT4015862 ENCLOSURE: 02

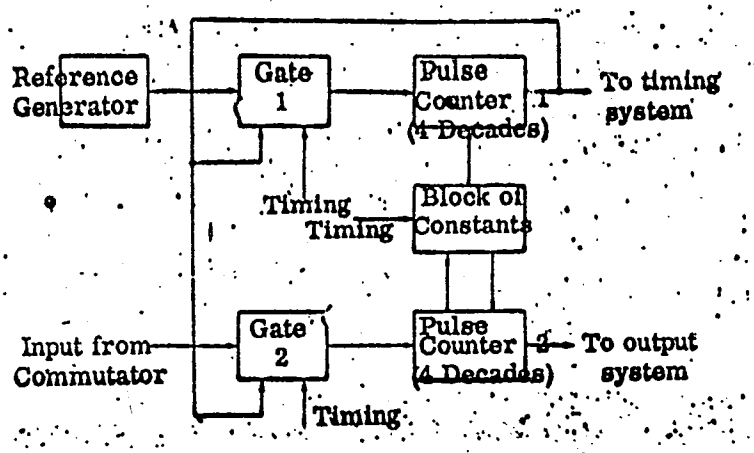


Fig. 2 - Block diagram of Measuring System.

Card 5/5

POPOV, Vladimir Sergeyevich; SIDEL'NIKOV, V.V., retsenzent; CHERNYSHEV, V.Ye., retsenzent; ROZHDESTVENSKAYA, T.B., otv. red.

[Heated metal resistors in electric measuring instruments and automatic control] Metallicheskie podogrevaemye soprotivleniia v elektroizmeritel'noi tekhnike i avtomatike. Moskva, Izd-vo "Nauka," 1964. 226 p. (MIRA 17:6)

GOL'DIN, M.M.; ZUYEV, V.D.; PINUS, L.A.; PONOMAREV, V.F.; CHERNYSHEV, V.Ye.; LIKHIN, N.I., inzh., retsenzent; YARKOV, A.M., inzh., red.

[Adjustment and operation of automatic lines composed of standard units; a handbook] Naladka i ekspluatatsiia avtomaticheskikh linii iz normalizovannykh uzlov; spravochnoe posobie. Moskva, Mashinostroenie, 1965. 443 p. (MIRA 18:10)

L 42187-66 EWT(d)/EWP(1) IJP(c) BB/GG/GD

ACC NR: AT6008928 SOURCE CODE: UR/0000/65/000/000/0125/0130

AUTHOR: Ambrosovich, V. D.; Kats, D. A.; Chernyshev, V. Ye. 47 B+1

ORG: none

TITLE: Nonvolatile storage 16 with four-coordinate access

SOURCE: AN SSSR. Institut elektromekhaniki. Avtomaticheskiye i teleinformatsionnyye sistemy (Automatic and teleinformation systems). Moscow, Izd-vo Nauka, 1965, 125-130

TOPIC TAGS: computer storage device, digital decoder, digital computer

ABSTRACT: Methods are considered for simplifying the nonvolatile-storage (up to 10000 numbers) decoders used in digital computers. When the storage capacity exceeds 1000 numbers, four control coordinates and square-loop ferrites become necessary. The simplest 4-coordinate circuit would have too many simultaneous

Card 1/2

L 42187-66
ACC NR: AT6008928

ferrite reversals and too high a noise. Hence, a more complicated circuit is suggested which uses 6 decoders for switching 3 control pulses. Before the access, all ferrites are reversed uniformly ("down") by an arbitrary pulse. The address is introduced in all 6 decoders. Further operations exclude the effect of noise on the storage functioning. In this system, the number of outputs of one decoder is equal to the 4th root of the number of addresses. Orig. art. has: 3 figures.

SUB CODE: 09 / SUBM DATE: 14Jul65

Card 2/2 mlc

L 00369-66 EWT(d)/EED-2/EWP(1) IJP(c) BB/GG/GS

ACCESSION NR: AT5013566 UR/0000/64/000/000/0194/0203

AUTHOR: Kats, D. A.[44]; Chernyshev, V. Ye.[44]

41
B+1

TITLE: Ferrite pair containing components of the operative memory

SOURCE: AN SSSR. Institut elektromekhaniki.[44] Avtomatika, telemekhanika i priborostroyeniye (Automatic control, remote control, and instrument manufacture). Moscow, Izd-vo Nauka, 1964, 194-203

TOPIC TAGS: computer memory, ferrite core memory, digital computer, computer component, memory core

16C, 44

ABSTRACT: The paper investigates basic problems connected with the design of the operative memory (OM) which is one of the most important components of digital computers. The device described in the article is controlled by pulses the amplitude of which is not subjected to limitation. Extensive theoretical and experimental analyses of the operation of ferrite pairs were carried out by the present authors in order to select the correct magnitude of the single controllable ferrite pair parameter (the coupling loop resistance), and to determine the optimum parameters of the pulses involved. The analysis, the results of which are presented in the present paper, followed the methodology outlined else-

Card 1/2

L 00369-66

ACCESSION NR: AT5013568

where by (V. V. Bardizh Sb. Magnitnyye elementy ustroystv vychislitel'noy tekhniki, AN SSSR, M., 1961). Orig. art. has: 9 formulas and 6 figures.

ASSOCIATION: None

SUBMITTED: 24Oct64 ENCL: 00 SUB CODE: DP

NO REF SOV: 002 OTHER: 000

Card 2/2

DAVYDOV, Pavel Semenovich; CHERNYSHEV, Valeriy Olegovich; VORONTSOV, A.Ye., inzh., retsenzent; VILENKIN, B.I., nauchn. red.; BRYTSINA, I.M., red.; KRYAKOVA, D.M., tekhn. red.

[True motion indicator in a ship's radar] Indikator istinnogo dvizheniia sudovykh RLS. Leningrad, Sudpromgiz, 1963. 163 p. (MIRA 17:3)

CHERNYSHEV, Ye. A.

USSR/Chemistry - Synthesis
Methane, Tetrapropyl- Aug 49

"The Synthesis of 4,4-di-n-Propylheptane (Tetrapropylmethane)," A. D. Petrov, Corr Mem, Acad Sci USSR, Ye. A. Chernyshev, 4 pp

"Dok Ak Nauk SSSR" Vol LXVII, No 6

Synthesizes subject compound and lists its physical properties along with others of the tetraalkylmethane series of hydrocarbons; tetramethylmethane, tetraethylmethane, tetrabutylmethane, and tributylmethane. Submitted 25 Jun 49.

PA 1/50 17

C/4

Synthesis of 4,4-dipropylheptane. A. D. Petrov and E. A. Chernyshev. *Doklady Akad. Nauk S.S.S.R.* 67, 1045–8(1949).—The literature on syntheses of R_4C is reviewed (14 references). $Pr(CH_2{:}CHCH_2)_3COH$ with HBr at 80–90° gave 81% of the corresponding *bromide*, d. 1.0906, which, added to Mg along with PrBr at 10–15°, gave 22% *diallyldipropylmethane*, b_{16} 95–105°; the use of allyl bromide in this reaction gave 30% *triallylpropylmethane*, b_{16} 95–105°. The products were crude mixts. of R_3CR' and $R_2CR'_2$. Hydrogenation of substantially triallylpropylmethane over Raney Ni at 190–210° at 80 atm. gave Pr_4C, b_{15} 103–5°, m. below −80°, d_4^{20} 0.7888, n_D^{20} 1.4390; appreciable amts. of Pr_3CH, b_{15} 75–81°, were obtained. Addn. of Pr_3CBr and PrBr to Mg gave a complex hydrocarbon mixt. from which no Pr_4C could be obtained.

G. M. Kosolapoff

CHERNYSHEV, YE. A.

USSR/Chemistry - Silicon Organic Compounds Oct 52

"Organomagnesium Synthesis of Tetraalkylsilanes of Composition $C_{14}Si$ - $C_{32}Si$," A. D. Petrov, Corr Mem Acad Sci USSR and Ye. A. Chernyshev, Inst of Org Chem, Acad Sci USSR

DAN SSSR, Vol 86, No 4, pp 737-740

Trialkylchlorosilane was treated with Grignard reagent to prepare a series of tetraalkylsilanes. The formulas, phys properties, and yields are given in a table. Alkylchlorosilanes with radicals C_8 to C_{24} were also prepd.

264T19

1. CHERNYSHEV, Ye.A., PETROV, A.D.

2. USSR (600)

4. Magnesium Organic Compounds

7. Magnesium organic synthesis of tetra-alkylme-thanes of C_{12} - C_{19} Dolk.AN SSSR 86 no. 5, 1952

9. Monthly List of Russian Accessions, Library of Congress, February 1953, Unclassified.

PETROV, A.D.; CHERNYSHEV, Ye.A.

Grinard synthesis of tetraalkylmethanes of composition $C_{12}H_{26}$-$C_{19}H_{40}$. (MIRA 5:11)
Doklady Akad. Nauk S.S.S.R. 86, 957-9 '52.
(CA 47 no.20:10453 '53)

CHERNYSHEV, E. A.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Organic Chemistry

(2) Chem

Synthesis and properties of tetrapropylmethane, tetrabutylmethane, and tetrahexylsilane. A. D. Petrov and E. A. Chernyshev. *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1952, 945-8(Engl. translation).—See *C.A.* 48, 565e.
H. C. H.

CHERNYSHEV, E. A.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Organic Chemistry

Behavior of γ-alkenyl halides in the Grignard-Wurtz synthesis. A. D. Petrov, M. A. Chel'tsova, and E. A. Chernyshev. *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1952, 949-54 (Engl. translation).—See *C.A.* 48, 547g.
H. L. H.

CHERNYSHEV E.A.

1-25-54
Organic Chemistry (2)

Synthesis and properties of tetrapropylmethane, tetrabutylmethane, and tetrahexylsilane. A. D. Petrov and E. A. Chernyshev. *V Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1952, 1082–6.—By means of modified Grignard-Wurtz reaction the 1st authentic prepn. of Pr_4C and Bu_4C are reported. The hexyl deriv. could not be isolated owing to its poor stability under the conditions used. Pr_3COH was satd. with HCl at 0° yielding 63% Pr_3CCl, b_7 54–6°, n_D^{20} 1.4378, d_{20} 0.8676. This (68 g.) added over 8 hrs. at 20–5° to RMgX (prepd. from 18.5 g. Mg, 95 g. PrBr, and 200 ml. Et_2O, then treated with 3.5 g. $HgCl_2$), allowed to stand overnight, refluxed 2 hrs., and hydrolyzed with 10% HCl gave 34.5 g. *4-propyl-3-heptene*, b_6 33–5°, n_D^{20} 1.4374, d_{20} 0.7682, and 12 g. Pr_4C, b_6 60–2°(crude), which after washing with H_2SO_4 and H_2O gave 9.2 g. *pure product*, b_6 60–1°, n_D^{20} 1.4322, d_{20} 0.7706, f.p. −26.5°. An 11.5% yield resulted after the evapn. of Et_2O soln. of the RMgX (above) and addn. of Pr_3CCl and octane at 80–90°. Similarly Bu_3COH with dry HCl gave Bu_3CCl, 79%, b_7 102–3°, n_D^{20} 1.4465, d_{20} 0.8744. This allowed to react with $BuMgBr$ in the presence of $HgCl_2$ as above gave 22.4% Bu_4C; the 2nd variation (above) run without $HgCl_2$ at 80–90° gave 13.5% yield; pure Bu_4C was obtained in 17% yield in the presence of $HgCl_2$ at 80–90° (combination of 2 methods); the product, b_6 103–4°, n_D^{20} 1.4440, d_{20} 0.7995, f.p. −6°. Reaction of $C_6H_{13}MgBr$ from 330 g. RBr with $C_6H_{13}CO_2Et$ gave 33% $(C_6H_{13})_3COH$, $b_{4.5}$ 153–4°, n_D^{20} 1.4490, d_{20} 0.8305; this satd. with dry HCl at 0° gave the RCl, which could not be distd. owing to decompn.; the undistd. *chloride* (80% yield), n_D^{20} 1.4530, d_{20} 0.8661, added to $C_6H_{13}MgBr$ in Et_2O with or without $HgCl_2$ at 0°, 20°, or 40° gave only *7-hexyl-6 tridecene*, $b_{4.5}$ 149–50°, n_D^{20} 1.4490, d_{20} 0.7957, f.p. −80°. To RLi from 216 g. $C_6H_{13}Br$ and 18.3 g. Li in Et_2O was added with cooling 18.5 g. $SiCl_4$; after 2 hrs. at room temp., distn. of Et_2O and heating the residue 5 hrs. at 150° the usual hydrolytic treatment yielded 30% $(C_6H_{13})_4Si$, b_5 178–9°, n_D^{20} 1.4532, d_{20} 0.8144, f.p. −30° and 26% $(C_6H_{13})_3SiOSi(C_6H_{13})_3$ (I), $b_{0.5}$ 223–5°, n_D^{20} 1.4547, d_{20} 0.8398. Heating RMgX with $Si(OEt)_4$ even at 175–80° failed to yield R_4Si; some 40% $(C_6H_{13})_3SiOEt$, $b_{4.5}$ 150–2°, n_D^{20} 1.4462, d_{20} 0.8298, and 10.7% I were the only products isolated. Under similar conditions $SiCl_4$ gave 36% I. Similar reaction of $C_6H_{13}Li$ with $SiCl_4$ gave no R_4Si and only 17% $(C_6H_{13})_3SiOSi(C_6H_{13})_3$, b_5 320–2°, n_D^{20} 1.4555, d_{20} 0.8127, was obtained. G. M. Kosolapoff

CHERNYSHEV, E.A.

Organic Chemistry

Chem 5 3

Felix Saunders

✓ Behavior of γ-alkenyl halides in the Grignard-Wurtz synthesis. A. D. Petrov, M. A. Chel'tsova, and E. A. Chernyshev. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1952, 1087–93.—Primary, secondary, and tertiary γ-alkenyl halides do not enter the Grignard-Wurtz reaction. The condensation of PrMgBr with 4-bromo-4-propyl-1,6-hexadiene takes place due to the circumstance that 1 allyl group of the halide isomerizes to a propenyl group, followed by an allylic shift and formation of 6-bromo-4-propyl-1,4-heptadiene (cf. *C.A.* 44, 1888*h*). To 16 g. activated Mg was added at 10° 120 g. CH_2:$CHCH_2CMe_2Br$ and the product was treated with MeBr; after usual treatment the mixt. gave 3.5 g. product, b. 70–80°, which after hydrogenation, b. 73–80°, n_D^{20} 1.3761, d_{20} 0.6684, provisionally identified as *isohexane;* some *isohexene* was also isolated, identified as *dibromide*, b. 98–9°, n_D^{20} 1.5110, d_{20} 1.5500. If 70 g. CH_2:$CHCH_2CMe_2Cl$ is added to MeMgBr from 21 g. Mg, the usual treatment gave 3 g. product identical with the above (b. 70–80°) and 40% of RCl is unreacted. If $HgCl_2$ is used as a promoter, some 13% unreacted RCl is recovered and the mixt. yields a solid, apparently an organomercury compound. Satn. of $PrCMe_2OH$ with HCl gave *$PrCMe_2Cl$*, b. 110–12°, n_D^{20} 1.4105, which (131 g.) added to MeMgBr (from 48 g. Mg) and treated as usual, gave 15% *2,2-dimethylpentane*, b. 78–9°, n_D^{20} 1.3820, d_{20} 0.6730; if $HgCl_2$ is added as a promoter, the yield is 12%. $MeCH(OH)CH_2$-CH:CH_2 yielded *$MeCHBrCH_2CH$:CH_2*, b. 111–12°, n_D^{20} 1.4520, d_{20} 1.2417, which failed to react with MeMgBr even after prolonged refluxing. To CH_2:$CHCH_2MgBr$ from 50 g. RBr and excess Mg was added 50 g. $MeCHBrCH_2CH$:CH_2 and the mixt. after 50 hrs. reflux gave only the starting material. RMgBr from MeCHBrPr (60 g.) treated with 50 g. CH_2:$CHCH_2Br$ and refluxed 80 hrs. gave 7.7 g. impure product, b. 110–12°, which after refluxing over Na gave unstated amt. of *4-methyl-1-heptene*, b. 112–13°, d_{20} 0.7191, n_D^{20} 1.4195. Treatment of *$Me_2C(OH)$-CH_2CH:CH_2* with PBr_3 in pyridine at 0° gave the corresponding *RBr* after 3–4 hrs. heating; the product, b_{20} 42–7°, n_D^{20} 1.4650, d_{20} 1.2001, (40 g.) was oxidized with 80 g. $KMnO_4$ (1% aq. soln.) at 0° yielding Me_2CO, HCO_2H, some $MeCH(OH)CO_2H$, $Me_2C(OH)CH_2CO_2H$, and valerolactone mixed with the hydroxyvaleric acid. Satn. with HBr of $PrC(OH)(CH_2CH$:$CH_2)_2$ at 80–90° gave the corresponding bromide, which (45 g.) and 80 g. PrBr added to 10 g. Mg and refluxed gave 0.2 g. tridecadiene, b_{15} 98–104°, n_D^{20} 1.4481, the latter, oxidized with $KMnO_4$, gave $MePrCO$, HCO_2H, $PrCHMeCO_2H$ (isolated also as Ag salt and amide, m. 77°). Hence the RBr isomerizes during reaction into 6-bromo-4-propyl-1,4-heptadiene and the final diene is *$PrCH$-$MeCH$:$CPrCH_2CH$:CH_2*. PBr_3 with 3-buten-1-ol in pyridine gave *$MeCH$:$CHCH_2Br$*, b. 97–9°, d_{20} 1.3247, n_D^{20} 1.4638 (Juvala, *C.A.* 25, 4844). This (34 g.) treated with 5.3 g. Mg in Et_2O and the mixt., freed of Et_2O and treated at 70–80° with 36 g. Bu_3CCl 5 hrs. and heated 3 hrs. longer gave only *5-butyl-4-nonene*, b_{15} 91–3°, n_D^{20} 1.4398. Under same conditions BuBr and Bu_3CCl gave 15% Bu_4C.

G. M. Kosolapoff

AS 7-13-54

(CA 48 no. 2: 547 '54)

CHERNYSHEV, E.A.

4

USSR

Synthesis of tetraalkylmethanes. A. D. Petrov and E. A. Chernyshev. *Trudy Vsesoyuz. Soveshchaniya po Khim. i Primeneniyu Kolli. 1951. Akad. Nauk Azerbaidzhan. S.S.R.* 1953, 39–43; *Referat. Zhur., Khim.* 1954, No. 23354.—It was shown by oxidation that in the process of organo Mg synthesis 4-halo-4-propyl-1,6-heptadiene is isomerized to 6-halo-4-propyl-1,4-heptadiene. From R_3CCl and RMgX at elevated temps. and in the presence of $HgCl_2$ were obtained tetrapropylmethane, b_5 60–2°, solidification p. −28°, $n^{20}D$ 1.4322, d_{20} 0.7700, and tetrabutylmethane, b_5 103–4°, solidification p. −6°, $n^{20}D$ 1.4440, d_{20} 0.7935, with yields of 10–30%. Under the same conditions tetrahexylmethane could not be obtained. For the purpose of comparing the properties of the structurally similar tetraalkylmethanes and tetraalkyl silanes the following were synthesized: tetrapropylsilane, b_{12} 90–1.5°, solidification p. −40°, $n^{20}D$ 1.4370, d_{20} 0.7828; tetrabutylsilane, b_5 108.5–8.8°, solidification p. −55.00°, $n^{20}D$ 1.4402, d_{20} 0.8005; and tetrahexylsilane, b_5 178–9°, solidification p. −30°, $n^{20}D$ 1.4532, d_{20} 0.8144.

M. Hoseh

CHERNYSHEV, Ye. A.

(2)

Chemical Abst.
Vol. 48 No. 5
Mar. 10, 1954
Organic Chemistry

Heteroörganic synthesis of branched paraffin hydrocarbons. A. D. Petrov and E. A. Chernyshev. *Uspekhi Khim.* 22, 1188–1225(1953).—Review of hydrocarbon synthesis by means of organometallic compounds. 171 references to 1952. G. M. Kosolapoff.

6-15-54

CHERNYSHEV, E. A.

USSR.

Chlorination of alkylsilane and disilane chlorides and alkylation of aromatic hydrocarbons by the resulting halides. A. D. Petrov, V. F. Mironov, V. A. Ponomarenko and E. A. Chernyshev. *Doklady Akad. Nauk S.S.S.R.* 97, 687-90(1954).—Chlorination of [illegible] g. EtSiCl[illegible] the temp. of the soln. reached [illegible] gave 64 g. EtSiCl[illegible] and 183 g. [illegible] for [illegible] hrs. [illegible] gave [illegible] and [illegible] the same substances [illegible] resp. when 141 g. [illegible] g. SO₂Cl₂ [illegible] were refluxed gently [illegible] with 2 addns. each of 0.5 g. Bz₂O₂. Heating [illegible] g. [illegible]SiCl₃, [illegible] g. SO₂Cl₂ and [illegible] g. Bz₂O₂ 4 hrs. at [illegible] gave 40% *Cl₃SiCHClCH₂SiCl₃*, b. 224-7°, n_D^{20} 1.4910, d_{20} 1.5780. Refluxing 60 g. $ClCH_2SiCl_3$ with 8.5 g. $AlCl_3$ and 95 g. C_6H_6 80-100 hrs., followed by removal of $AlCl_3$ by addn. of 0.06 mole $POCl_3$ and 100 ml. ligroine, gave 62% *$PhCH_2SiCl_3$*, b_{745} 213-14°, n_D^{20} 1.5252, d_{20} 1.2790; similarly were prepd. 45% *ClC₆H₄CH₂SiCl₃*, b_{18} 103-4°, n_D^{20} 1.5695, d_{20} 1.3605; 65% *PhCHMeSiCl₃*, b_{745} 225-8°, n_D^{20} 1.5210, d_{20} 1.2425; 65% *PhCH₂CH₂SiCl₃*, b_3 93-6°, n_D^{20} 1.5185, d_{20} 1.2397; 55% *MeC₆H₄CH₂CH₂SiCl₃*, b_{12} 121.5-2°, n_D^{20} 1.5178, d_{20} 1.2129.

G. M. Kosolapoff

CHERNYSHEV, E.A.

USSR/Chemistry - Metalorganic compounds

Card 1/1 Pub. 22 - 25/48

Authors : Chernyshev, E. A., and Kozhevnikova, L. G.

Title : Addition of lithium to alpha-trialkylsilylnaphthalines

Periodical : Dok. AN SSSR 98/3, 419-422, Sep 21, 1954

Abstract : The reaction of lithium addition to alpha-trialkylsilylnaphthalin was investigated. It was found that the trialkylsilyl substitute increases the rate of Li-addition to naphthalin. It was also established that Li attaches itself only to the ring which has no substitute. This fact was confirmed by the difference in the infrared spectra of these compounds. Detailed results of the investigation are presented in the table. Five USSR references (1946-1953)

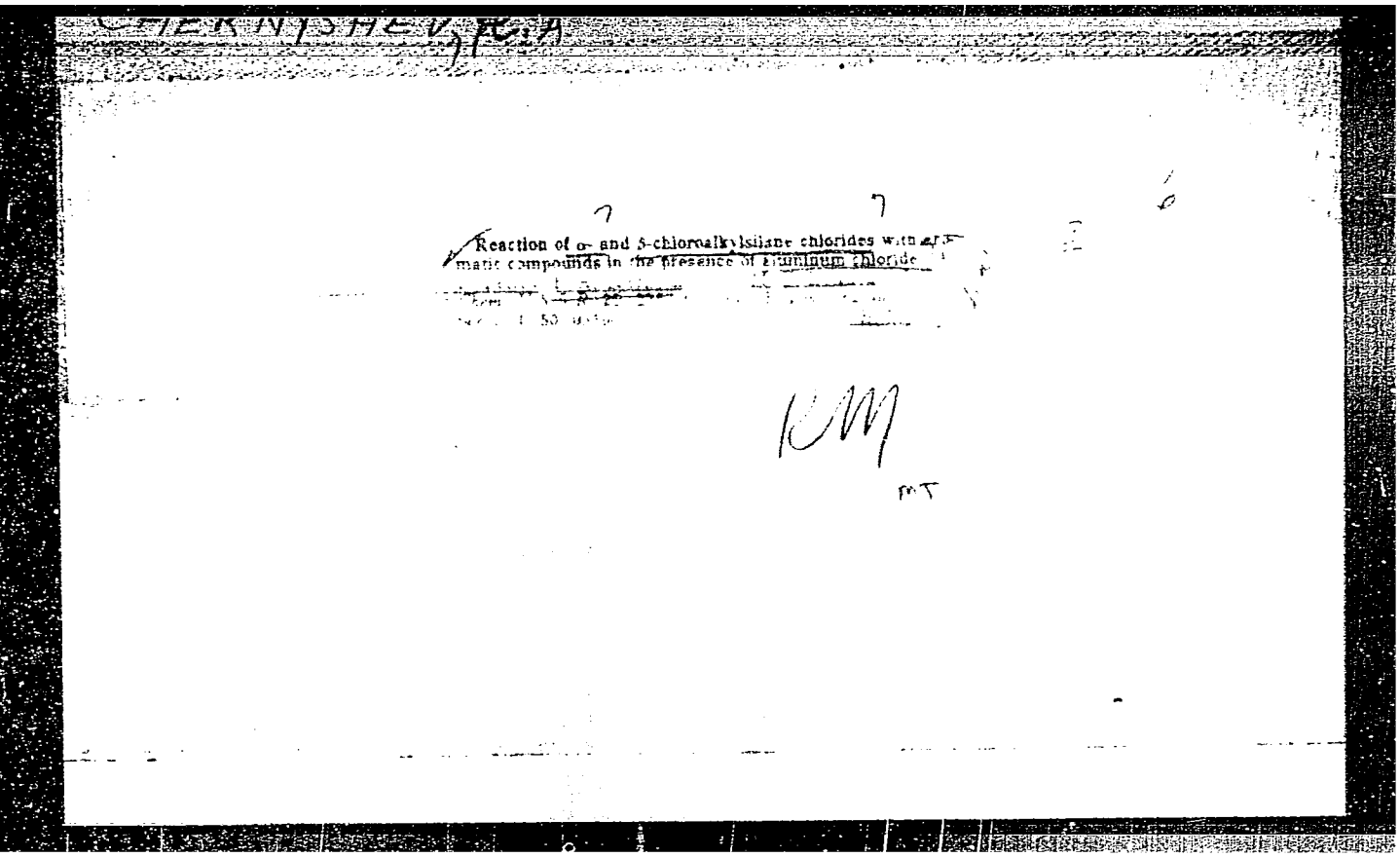
Institution : Acad. of Sc. USSR, The N. D. Zelinskiy Institute of Organic Chemistry

Presented by: Academician B. A. Kazanskiy, May 15, 1954

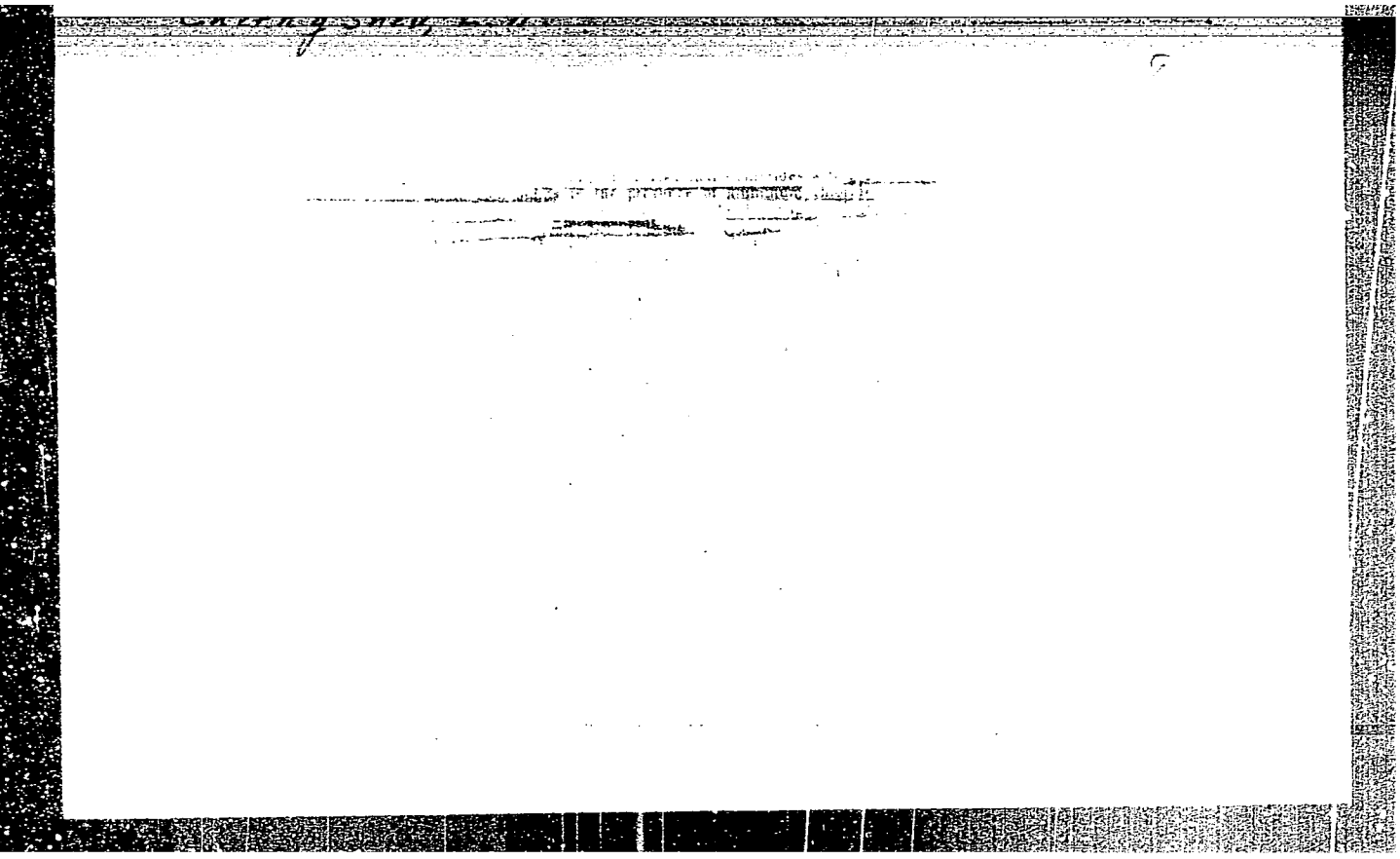
CHEL'TSOVA,M.A.; CHERNYSHEV,Ye.A.; PETROV,A.D.

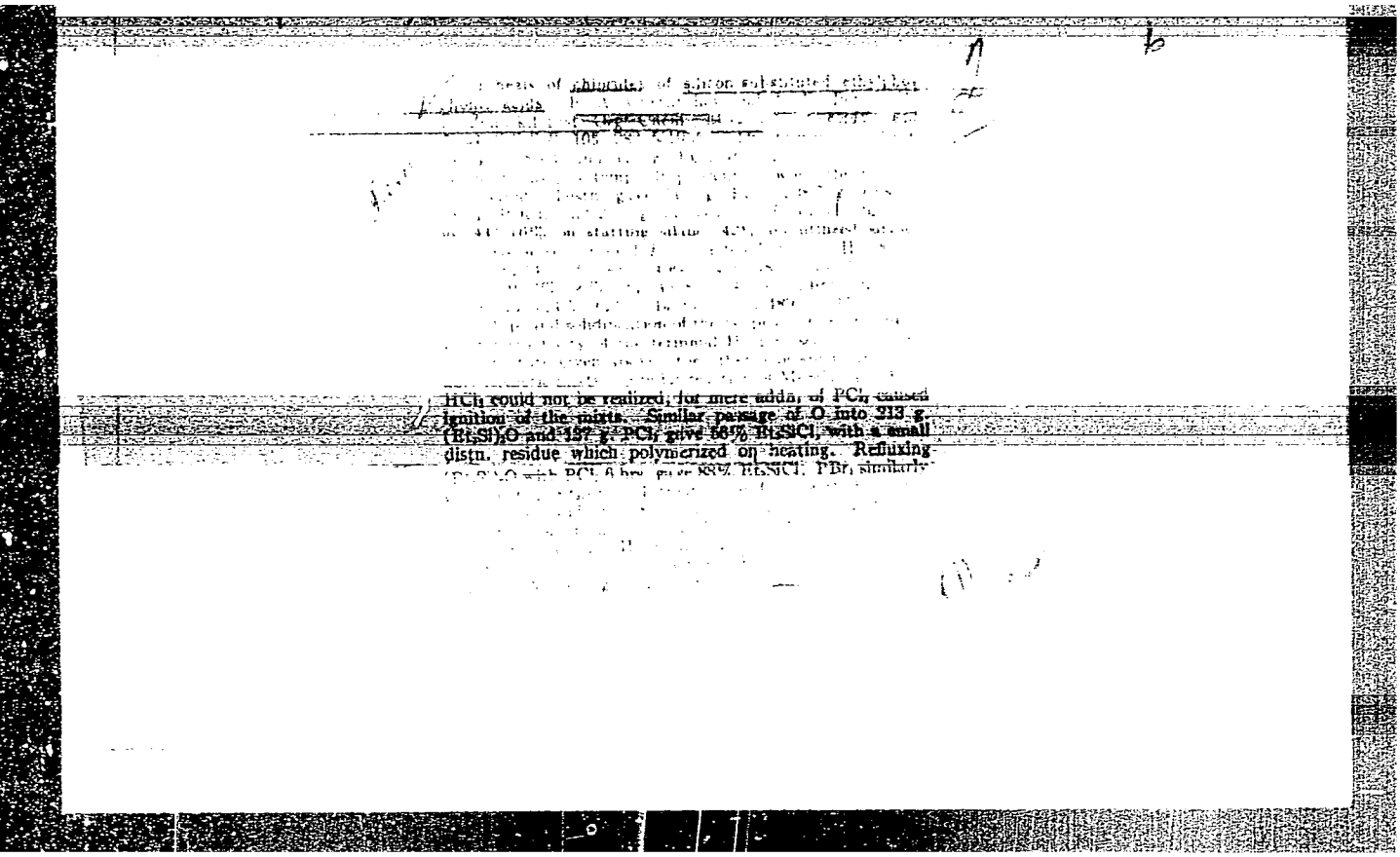
Behavior of alkenyl halides with multiple linkage in γ-, δ-, and ε-positions in condensation reactions with alkyl halides in presence of magnesium. Izv.AN SSSR. Otd.khim.nauk no.3: 522-527 My-Je '55. (MLRA 8:9)

1. Institut organicheskoy khimii im. N.D.Zelinskogo Akademii nauk SSSR.
(Halides) (Condensation products (Chemistry))

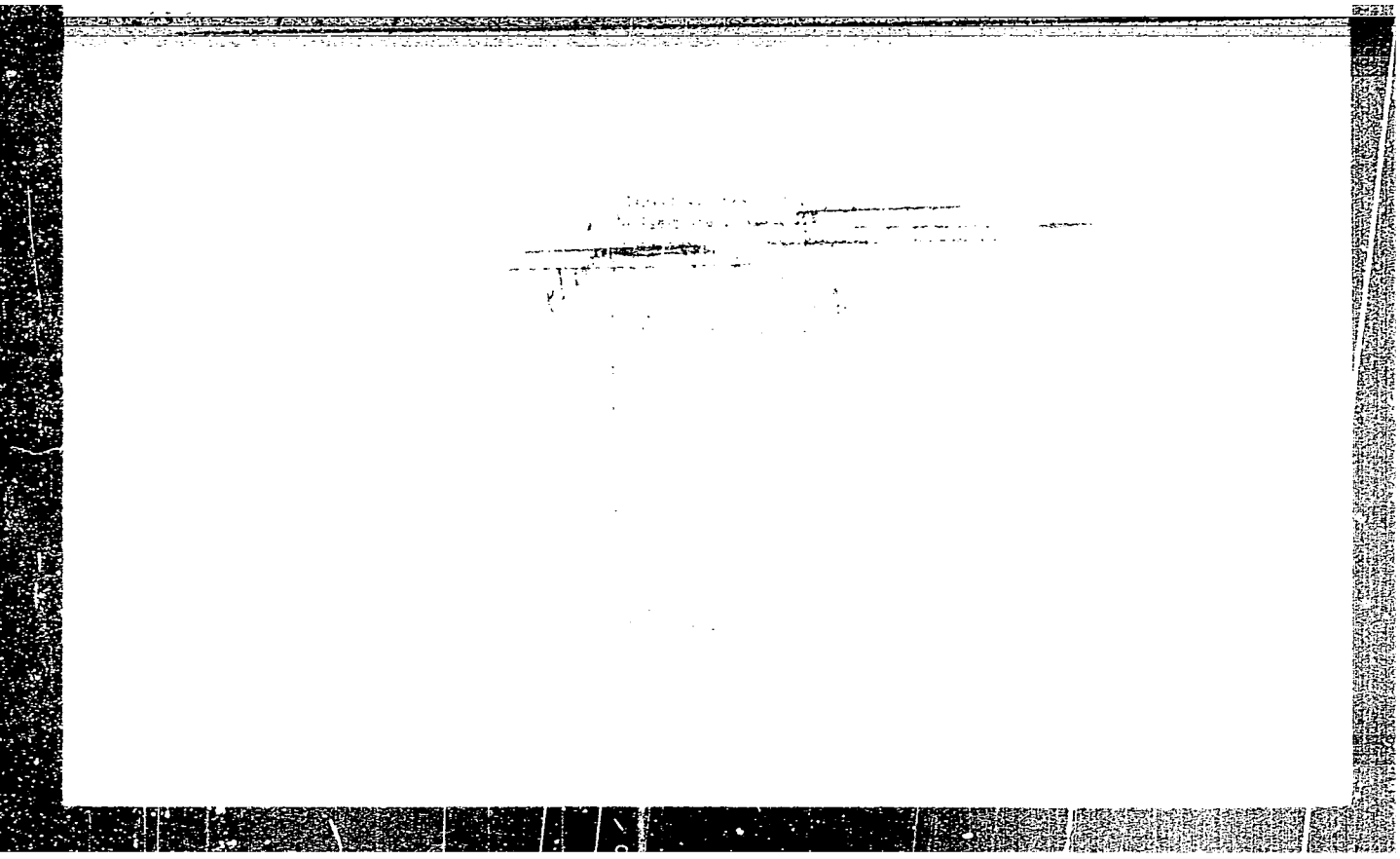


Reaction of α- and β-chloroalkylsilane chlorides with aromatic compounds in the presence of aluminum chloride

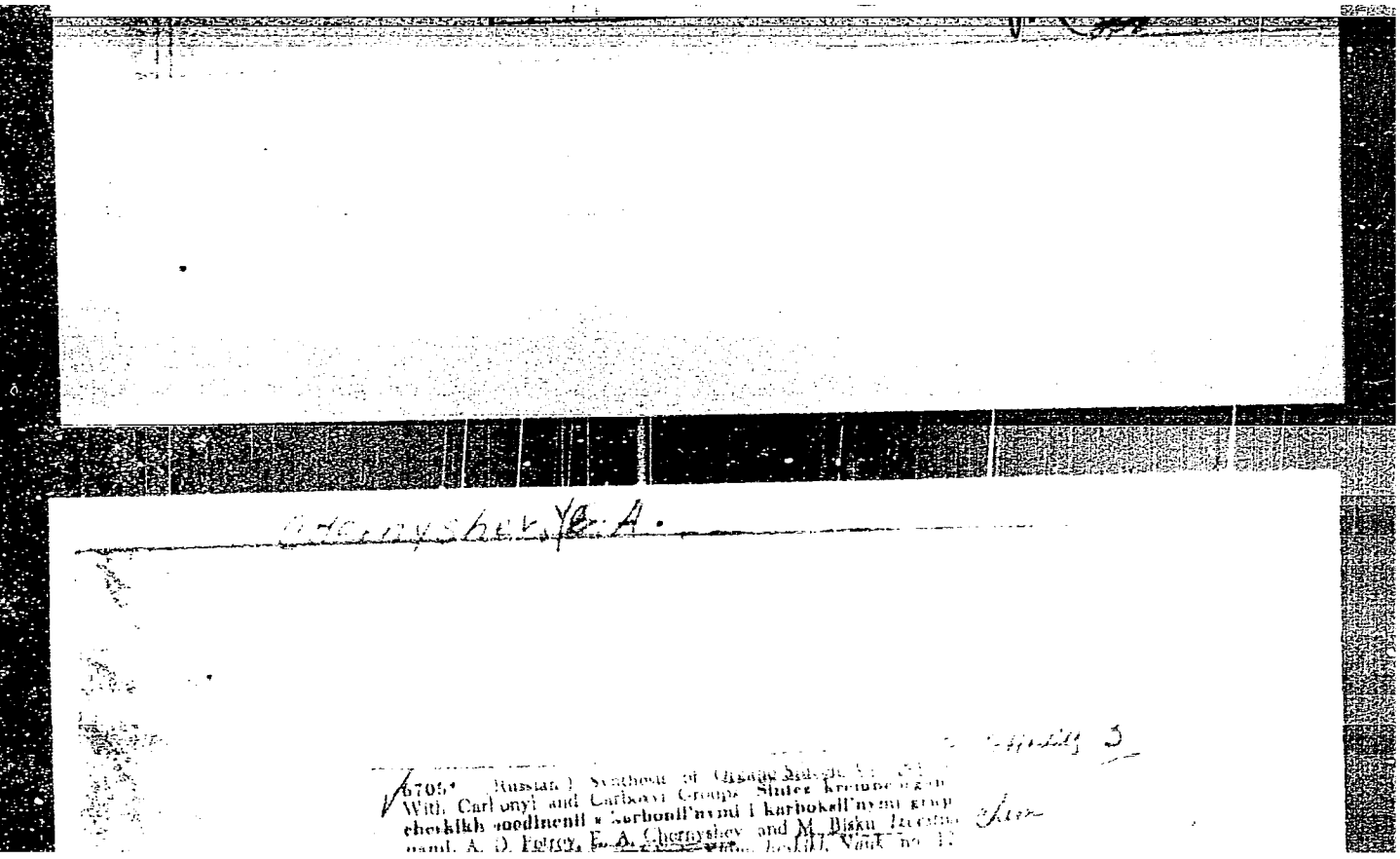




HCl could not be realized, for mere addn. of PCl_5 caused ignition of the mixts. Similar passage of O into 213 g. $(Et_3Si)_2O$ and 127 g. PCl_5 gave 58% Et_3SiCl, with a small distn. residue which polymerized on heating. Refluxing



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000308720013-7"



6705* (Russian) Synthesis of Organic Substances [illegible]
With Carbonyl and Carboxyl Groups. Sintez [illegible]
cheskikh soedinenii s karbonil'nymi i karbokil'nymi gruppami. A. D. Petrov, E. A. Chernyshev and M. Bisku [illegible]
[illegible]

CHERNYSHEV, YE. A.

USSR/Organic Chemistry - Synthetic Organic Chemistry, E-2

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61592

Author: Petrov, A. D., Chernysheva, T. I., Chernyshev, Ye. A.

Institution: None

Title: On the Stability of the Si-C Bond of Aromatic and Hydroaromatic Silanes Toward Action of Acid Reagents

Original Periodical: Zh. obshch. khimii, 1956, 26, No 1, 138-142

Abstract: Investigation of the interaction of 1,4-di-(tributylsilide)-1,4-dihydrobiphenyl (I), 1,4-di-(triethylsilyl)-1,4-dihydro-naphthalene (II), 9,10-di-(triethylsilyl)-9,10-dihydroanthracene (III), triethyl-biphenylsilane (IV) and triethyl-naphthylsilane (V) with 20% HCl, dry HCl in glacial CH_3COOH and $AlCl_3$. On boiling HCl breaks down 89% of Si-C bond in V, while the other compounds undergo no change. With dry HCl the reaction was carried out under standard conditions utilized to study the stability of Si-C bond. % of decomposition: V 84; IV 43; III 72 (decomposition product consists of 80% anthracene

Card 1/2

USSR/Organic Chemistry - Synthetic Organic Chemistry, E-2

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61592

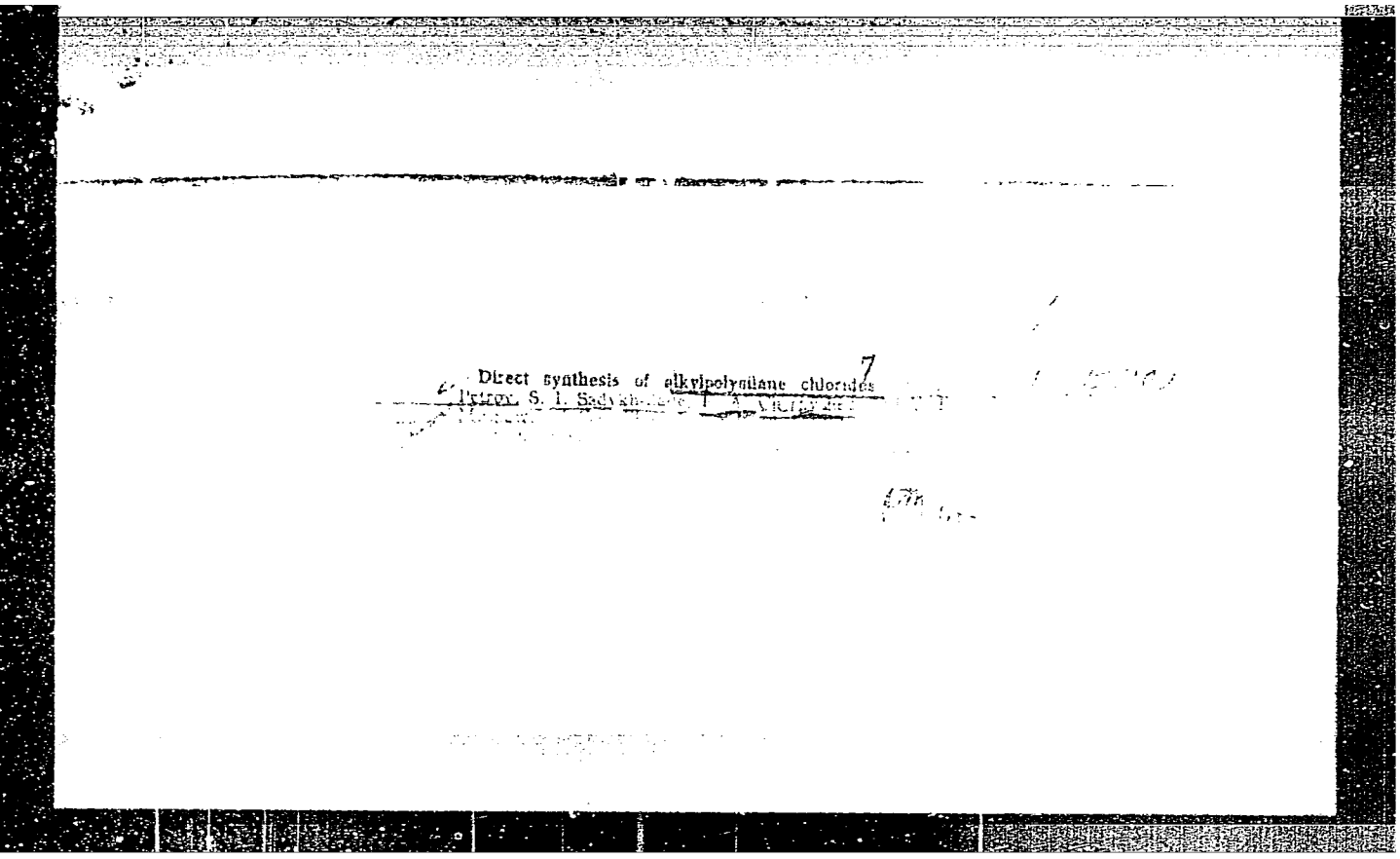
Abstract: and 20% dihydroanthracene); II 10 (naphthalene is the decomposition product); I is not changed, $AlCl_3$ (15-25°, 15 hours) effects a quantitative cleavage of Si-C bond; concurrently with decomposition takes place a quantitative dehydr[redacted]tion.

Card 2/2

5

7

Direct synthesis of polychlorosilylalkanes. A. D. Petrov, [illegible] Chernyshev and V. I. Mironov [illegible] 28 1248—1254 [illegible] with three and four Si atoms, through [illegible] and disilyl chlorides, is described, using an 80 : 20 mixture [illegible] with a flow rate of 20·0/25·0 ml/hr (cf. Dokl. Akad. Nauk [illegible] 1955 105, 496). Besides reaction with Si and cleavage of [illegible] pyrolysis was also employed in direct synthesis with [illegible] and polychloroalkylsilyl chlorides, with separation of [illegible] reduction of polychlorides (in some conditions [illegible]. Twelve new I (with two, three and four Si atoms) [illegible] trichlorosilylethane [illegible] trichlorosilylethane [illegible] [illegible] 124°/3 mm [illegible] 7-trisilaheptane (b.p. 154 [illegible] trichlorosilylmethane [illegible] 108 [illegible] methyldichlorosilyl bis(trichlorosilyl)methane [illegible] 125/10 mm, m.p. 49—50° [illegible] 2-tetra [illegible] (b.p. 139—140/3 mm) [illegible] ethylene (b.p. 206—208°/15 mm, m.p. 55—59°), and 2 [illegible] trichlorosilylbutane (b.p. 237—239°/736 mm). A. L. B.



Direct synthesis of alkylpolysilane chlorides

11328. (Russian.) Synthesis and Properties of Silicon Hydrocarbons and Their Derivatives. [illegible] ... [illegible] and L. A. [illegible] ... 292-344.

Direct synthesis of silico-organic compounds. [illegible] dehydrohalogenation of the compounds. Friedel-Craft reactions. Silicon hydrocarbons of aliphatic aromatic, fatty-aromatic and the naphthene series. Polymerization and copolymerization of alkenylsilanes.

Reaction of Chloroalkylsilanechlorides with Aromatic Compounds in Presence of Metallic Aluminum

with beta-chloroethyltrichlorosilane was also successful. No tar deposits were found in any of the reaction mixtures. By mixing beta-chloroethyltrichlorosilane with diphenyl oxide, the authors obtained beta-(phenoxy-phenyl)-ethyltrichlorosilane (yield 22.5%). The diphenyl oxide was silico-alkylated with beta-chloroethyl-trichlorosilane and beta-chloroethyldichlorosilane in presence of $AlCl_3$ and the yield of reaction products was approximately the same as during the use of metallic aluminum. The amount of aluminum chloride formed in reactions with aluminum catalysts was very small and required no elimination.
There are 7 Slavic references.

ASSOCIATION: Academy of Sciences of the USSR, Institute of Organic Chemistry (Institut Organicheskoy Khimii Akademii Nauk SSSR)

PRESENTED BY:

SUBMITTED: February 17, 1956

AVAILABLE:

Card 2/2

CHERNYSHEV, Ye.A.; DOLGAYA, M.Ye.; YEGOROV, Yu.P.

Reaction of chloralkylalkyldichlorosilane with aromatic compounds in presence of $AlCl_3$. Zhur.ob.khim. 27 no.10:2676-2681 O '57. (MIRA 11:4)

1. Institut organicheskoy khimii Akademii nauk SSSR.
(Silane compounds) (Aluminum chloride)

CHERNYSHEV, Ye. A.

PRIKHOT'KO, A.F.

24(7) p 3 PHASE I BOOK EXPLOITATION SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Gazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Landsberg, G.S., Academician (Resp. Ed., Deceased), Neporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Kornitskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Miliyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Card 25/30

AUTHOR: Chernyshev, Ye. A. 62-1-16/29

TITLE: Synthesis of Some Silicon-Phosphor Organic Compounds (Sintez nekotorykh kremnefosfororganicheskikh soyedineniy)

PERIODICAL: Izvestiya AN SSSR. Otdeleniye Khimicheskikh Nauk, 1958, Nr 1, pp 96 - 98 (USSR)

ABSTRACT: Recently a simple method of the synthesis of hydrolyzing silicon phosphor-organic compounds with the aid of a reaction of the interaction of aliphatic compounds with PCl_3 and O_2 (ref. 2,3) was suggested by the author. The American references refer shortly to similar papers, however, without data in the experimental field. In present paper the author described the interaction of PCl_3 and O_2 with ethylsilanechlorides and tetraethylsilane. In continuation of the investigation of this reaction it was found that the increase of the radicals in the original alkylsilanechloride leads to a certain increase of the yield of the chloroanhydrides of the substitutuents of the silicon of alkyl phosphinic acids. In consequence of the interaction of the propyltrichlorosilane, methylpropyldichlorosilane, the α- and ß-chloroethyltrichlorosilane, and the triethylvinylsilane with trichloro-phosphor and oxygen 5 silicon substituted chloroanhyd-

Card 1/2

rides of the alkyl- and chloroalkyl phosphinic acids were synthetized (see table). There are 1 table, and 6 references, 2 of which are Slavic.

ASSOCIATION: Institute of Organic Chemistry imeni N. D. Zelinskiy, AS USSR (Insitut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR)

SUBMITTED: July 1o, 1957

AVAILABLE: Library of Congress

1. Silicon-Phosphor compounds (Organic)-Synthesis

CHERNYSHEV, Ye.A.

KORSHAK, V.V.; POLYAKOVA, A.M.; SAKHAROVA, A.A.; PETROV, A.D.; CHERNYSHEV, Ye.A.

Polymerization and copolymerization of unsaturated silicon organic compounds. Dokl. AN SSSR 119 no.2:282-284 Mr '58. (MIRA 11:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i Institut korrespondenty AN SSSR (for Korshak, Petrov).
(Styrene) (Polymerization) (Silicon organic compounds)

AUTHORS: Chernyshev, Ye. A., Dolgaya, M. Ye., Yegorov, Yu. P., Semenov, L. V., Petrov, A. D. 79-28-3-10/61

TITLE: The Silicon Alkylation of Aromatic Compounds With Dichloro-Alkylsilane-Chlorides (Kremnealkilirovaniye aromaticheskikh soyedineniy dikhloralkilsilankhloridami)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 3, pp. 613-616 (USSR)

ABSTRACT: Based on earlier investigations of the same authors, in which the silicon alkylation of aromatic compounds was carried out with chloroalkyltrichlorosilanes and chloroalkyldichlorosilanes in the presence of $AlCl_3$ or metallic aluminum, they investigated the same alkylation with benzene, toluene and chlorobenzene together with dichloro-alkylsilanechlorides. These reactions did not take place as simply as the above mentioned , the yields also being small (3-48 % compared with 30-80 %); this most probably because of the intensive formation of resin. Besides the character of the final products of alkylation varied according to the

Card 1/3

nature of the two components (table 1). The fact is of interest that with α,α-, β,β- and α,β-dichloroethyltrichlorosilanes chlorobenzene reacts mainly with the two chlorine atoms of the dichloroalkyltrichlorosilane, giving three times higher yields than benzene. Also toluene reacts with greater yields, however, only with one chlorine atom, the other being substituted by a hydrogen atom. It is known that toluene rather easily gives its electrons to a binding with hydrogen. In order to investigate the structure of the obtained compounds their ultraviolet absorption spectra were taken. It was shown that in the silicon alkylation of benzene, toluene and chlorobenzene with dichloroethyltrichlorosilanes one chlorine atom in the dichloroethyl radical is substituted by hydrogen. With benzene and chlorobenzene this reaction does not occur as main reaction, which, however, is entirely the case with toluene. In the silicon alkylation by means of dichloromethylsilanechlorides no reduction reactions are observed. Ultraviolet absorption spectra were taken for a number of synthetized compounds

The Silicon Alkylation of Aromatic Compounds With Dichlorc- 79-28-3-10/61
Alkylsilane-Chlorides

after their methylation; this made possible to specify their structure more exactly.
There are 2 figures, 2 tables, and 6 references which are Soviet

ASSOCIATION: Institut organicheskoy khimii Akademii nauk SSSR (Institute for Organic Chemistry, AS USSR)

SUBMITTED: March 11, 1957

Card 3/3

SOV/62-58-8-7/22

AUTHORS: Petrov, A. D., Mironov, V. F., Ponomarenko, V. A., Sadykh-Zade, S. I., Chernyshev, Ye. A.

TITLE: Synthesis of New Types of Silicon Containing Monomers (Sintez novykh vidov kremnesoderzhashchikh monomerov)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1958, Nr 8, pp. 954-963 (USSR)

ABSTRACT: This lecture was delivered at the General Meeting of the Department of Chemical Sciences of the AS USSR on April 25, 1958. First the previous paper (Ref 1) and the papers written by other authors (Refs 2 and 3) are discussed in short, and then the lecture deals with the three subjects: a) The catalytic binding of hydride silanes with unsaturated and aromatic compounds. b) The condensation of hydride silanes with alkyl-aryl- and alkenyl halides at high temperature. c) The synthesis of polymerizing silicon hydrocarbons (and their derivatives). The result of the experiments carried out is as follows: In the presence of H_2PtCl_6 alkyl dichlorosilanes bind with $CH \equiv CH$, $CH_2 = CH_2$, $CH_2 = CHCH_3$ (at temperatures of from 20 to

Card 1/2

Synthesis of New Types of Silicon Containing Monomers

60°C) in almost quantitative yield. In the presence of platinum catalysts alkyl dichlorosilanes supply higher yields of compound products. In the presence of peroxides higher yields are to be found due to silicochloroform. By means of the condensation (600°C) of alkyl dichlorosilanes and silicochloroform with aryl- and alkenyl halides not accessible di-and trichlorosilanes have been obtained until now. Silicon containing butadiene derivatives, acrylic acid derivatives, derivatives of vinyl esters and acetals were synthesized for the first time, all of which form linear, solid polymers (under atmospheric pressure). There are 1 figure, 3 tables, and 12 references, 10 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy, AS USSR)

SUBMITTED: May 4, 1958

SOV/79-28-10-42/60

AUTHORS: Chernyshev, Ye. A., Dolgaya, M. Ye., Yegorov, Yu. P.

TITLE: Reaction of γ-Chloro-Propyl-Silane Chloride With Aromatic Compounds in the Friedel-Krafts Reaction (Vzaimodeystviye γ-khlorpropilsilankhloridov s aromaticheskimi soyedineniyami po reaktsii Fridelya-Kraftsa)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 10, pp 2829-2837 (USSR)

ABSTRACT: Further to the investigations (Ref 1) into the dependence of the reactivity of chloro alkyl silane chloride on the position of the C-Cl bond with regard to the silicon atom, the authors investigated the reaction of the β- and γ-chloro-propyl-trichloro silanes, as well as of the β- and γ-chloro-propyl-methyl-dichloro silanes, with various aromatic compounds in the presence of $AlCl_3$ or of Al. Either silane reacted most energetically with benzene, toluene, and chloro benzene. This reaction takes two to three hours at 60-70° (40-60 % derivatives yield). In order to reduce resinification in the case of diphenyl, diphenyl oxide, and naphthalene, aluminum was used as a catalyst, which resulted in lower yields (20-40 %).

Card 1/3

SOV/79-28-10-42/60

Reaction of γ-Chloro-Propyl-Silane Chloride With Aromatic Compounds in the Friedel-Krafts Reaction

The γ-chloro-propyl-trichloro- and γ-chloro-propyl-methyl-dichloro-silanes reacted as energetically as the β-isomers, without any decrease in the yields of silicon alkylation products. Although the reactivity of the α-chloro-alkyl-silane chlorides is much lower than that of the β-isomers, the reactivity of the γ-chloro-alkyl-silane chlorides is not lower than that of the β-chlorides. In the silicon alkylation of benzene with γ-chloro-propyl-trichloro silane, the β- and γ-isomers are thus formed in a ratio of 1:2,9; in the alkylation with γ-chloro-propyl-methyl-dichloro silane, only the γ-isomer is formed. All the other reactions of the above-mentioned silanes were carried out under analogous conditions (Table 1). The resulting compounds were methylated (Table 2). There are 2 tables and 4 references, 4 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii Akademii nauk SSSR
(Institute of Organic Chemistry at the Academy of Sciences, USSR)

SUBMITTED: August 15, 1957

Card 2/3

AUTHORS: Petrov, A. D., Corresponding Member of the AS USSR, Chernyshev, Ye. A., Tolstikova, N. G. 20-118-5-30/59

TITLE: The Synthesis of p-Trialkylsilylstyrenes and p-Trialkylsilylalkylstyrenes (Sintez p-trialkilsilil- i p-trialkilsililalkilstirolov)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 5, pp. 957-959 (USSR)

ABSTRACT: Only 2 patents are devoted to the synthesis and to the investigation of the styrenes substituted in the silicium cycle, without giving a detailed description of this synthesis or mentioning the properties of the obtained products (reference 6, 7). The present paper deals with the methods of synthesis of the styrenes mentioned in the title above. The general scheme of the synthesis is as follows: According to the Grin'yar (Grignard) reaction a corresponding alcohol is produced which is then dehydrated. Thus a silicon--substituted styrene is formed. This reaction was rather successful with p-trimethylsilylphenylmagnesium-bromides, with p-triethylsilylphenylmagnesium-bromides, as well as with

Card 1/3

acetic aldehyde and acetone. From these the corresponding alcohols were formed with a yield of 40 - 60%. These were dehydrated above Al_2O_3 at 340 - 350°C in a vacuum of 150 - 160 torr. A partial polymerization of the produced styrene took place. The styrene yield was 30 - 50%. Benzyltrichloro-silane was brominated with bromine in presence of Fe. Only one product was formed. It concerned β-phenylethyltrichloro--silane. Both substances were subjected to a spectral analysis after previous ethylation. The spectra were similar and contained only 2 bands (1775 and 1880 cm^{-1}) which is characteristic of paraisomers (reference 9). From the bromides the corresponding alcohols were obtained by means of the Grin'yar reaction with a yield of only 13%. From the first of these by dehydration above Al_2O_3 a corresponding styrene was formed with a 50% yield. The styrene from the second alcohol was completely polymerized. The bromination and the further reactions are described in details. Table 1 shows the properties of the alcohol. The experimental results can be seen in the same table. Properties and yields of the synthetic styrenes are contained in table 2. There are 2 tables, and 10 references, 6 of which are Soviet.

The Synthesis of p-Trialkylsilylstyrenes and p-Trialkylsilylalkylstyrenes

20-118-5-30/59

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute for Organic Chemistry imeni N. D. Zelinskiy AS USSR)

SUBMITTED: July 17, 1957

Card 3/3

CHERNYSHEV, Ye. A.

AUTHORS: Nametkin, N. S., Corresponding Member, AS USSR, Polyakova, A. M., Sakharova, A. A., Petrov, A. D., Corresponding Member, AS USSR, Chernyshev, Ye. A.

[illegible]/60

TITLE: Polymerization and Co-Polymerization of Unsaturated Organosilicon Compounds (Polimerizatsiya i sopolimerizatsiya nepredel'nykh kremniyorganicheskikh soyedineniy) The p-Trialkyl Silyl Styrenes (p-trialkilsililstiroly)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol 119, Nr 2, pp 282-284 (USSR)

ABSTRACT: These are the most important factors in the polymerization power of substituted ethylenes: nature, number, mutual position and volume of the substituents which are found in the carbon atoms by a double bond (ref 1). The authors demonstrated earlier (ref 2) that trialkyl vinyl silanes (trialkyl silyl ethylenes, $R_3SiCH = CH_2$) may polymerize according to the mechanism of the radical. On this occasion viscous products form with a polymerization coefficient = 12-18. The introduction of a second substituent into the β-position decreases or stops the polymerization power of

Card 1/4

Polymerization and Co-Polymerization of Unsaturated Organosilicon Compounds. The p-Trialkyl Silyl Styrenes

this molecule (refs 3,4). The introduction of a methyl group into the α-position produces similar effect since spatial obstacles rise. However, polymerization still takes place under pressure. The polymerization ease of the silicon olefins is determined by the same factors as that of the unsaturated hydrocarbons. Earlier, the authors published papers (refs 2-4) in which the production of low molecular polysilanes is discussed. The present paper deals with the production of high molecular polysilanes and the investigation of their properties. Investigations were carried out under standard conditions at 6000 atmospheres absolute pressure and at atmospheric pressure under the presence of 1 mol % of the initiator: 1) polymerization of the materials mentioned in the subtitle, 2) of the p-triethyl silyl α-methyl styrenes, and 3) of co-polymerization of p-triethyl silyl styrene with styrene. While the silenes investigated earlier (refs 2-4) formed polymers on the application of pressure, p-triethyl silyl styrenes can be polymerized under the pressure

Card 2/4

pressure. On this occasion, however, the molecular weight of the polymers is considerably increased (tabl. 1). Furthermore, it was found that p-triethyl silyl α-methyl styrene polymerizes into a solid product of small molecular weight and more slowly than p-triethyl silyl styrene under a pressure of 6000 atmospheres absolute pressure. The results of co-polymerization mentioned under 3) showed that on this occasion a co-polymer with a ratio of the members of p-triethyl silyl styrene and of styrene = 1:2 forms under pressure but also without pressure. It shows a viscosity characteristic of products which are obtained under high and under atmospheric pressure. The thermomechanic samples of the polymers showed that of p-triethyl silyl styrene has a higher temperature of vitrification than a polystyrene prepared under the same conditions; the polymer of the p-triethyl silyl α-methyl styrene shows a still higher temperature of vitrification (fig. 1). The thermomechanic curves of the produced polymers and co-polymers are illustrated on fig. 1. An experimental

Polymerization and Co-Polymerization of Unsaturated Organosilicon Compounds. The p-Trialkyl Silyl Styrenes 20-119-2-25/60

part with the usual data follows.
There are 1 figure, 2 tables, and 7 references, 6 of which are Soviet

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSS (Institute for Elemental-organic Compounds, AS USSR)
Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute for Organic Chemistry imeni N. D. Zelinskiy AS USSR)

SUBMITTED: September 6, 1957

Card 4/4

SOV/2o-122-1-27/44

5(4), 15(6)

AUTHORS: Kartsev, G. N., Syrkin, Ya. K., Corresponding Member, Academy of Sciences, USSR, Mironov, V. F., Chernyshev, Ye.A.

TITLE: The Dipole Moments of Some Silicon-Organic Compounds (Dipol'nyye momenty nekotorykh kremniyorganicheskikh soyedineniy)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 1, pp 99-1o2 (USSR)

ABSTRACT: The authors measured the dipole moments of some silicon-organic compounds according to the heterodyne method at 25^{0} in benzene. The extrapolated polarizations were calculated according to a formula of Gedestrand. For compounds which contain silicon, the atomic polarization has to be taken into account. The experimental results are given in a table. A distinctive peculiarity of the silicon compounds is the increased polarity with respect to the corresponding carbon bonds. According to the available data, the bond moment of Si-H may be estimated to 1D, and the bond moment of Si-C - to 0,6D. In both of these cases, the positive end of the dipole is directed towards the silicon. In the bonds

Card 1/2

The Dipole Moments of Some Silicon-Organic Compounds SOV/2o-122-1-27/44

Si-O and Si-halogen, the weight of the ionic state is higher. Numerous and detailed data are given. There are 1 table and 5 references.

ASSOCIATION: Moskovskiy Institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova
(Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov)

SUBMITTED: May 15, 1958

Card 2/2

CHERNYSHEV, Yevgeniy A.

Additions according to the reactions of radicals to α-, β-, γ-alkenylsilane. In Russian. Gl.hem.dr. 23/24 no.1/2:17-22 '58/59. (MRAI 9:5)

1. Akademiya nauk SSSR, Institut organicheskoy khimii im. Zelinskogo, Laboratoriya khimii uglevodorov, Moskva.
(Alkenyl groups) (Silanes)

[redacted], A. S. and [redacted], V. K.
Prophylactic fluorization by Lukomskiy method in galvanic industries Stomatologiya, Moscow 1940, 4 (28-29)

Paragraph 3373
Acute enamel caries can be arrested by rubbing the attacked spots with fluoride paste. The healing effect of fluoride can also be observed in tissues suffering from acid necrosis produced by contact with acids in chemical industries.

SO: Section II Vol. 3 No. 1-6

1. TSIRLIN, A., Eng. : CHKEISHVILI, V. : KRYMSKIY, I.

2. USSR (600)

4. Water - Purification

7. Automatization of the processes of water coagulation at water works. Zhil. -kom. khoz. 12 no. 10, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

CHESKHOV, A.A.; SHIROKOV, Yu.M.

Invariant parametrization of the relativistic scattering matrix. Zhur.eksp.i teor.fiz. 42 no[illegible]:144-151 Ja '62. (MIRA 15:3)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta. (Nuclear reactions)

CHESKIDOV, A.M., dorozhnyy dispetcher (Irkutsk)

Potentials for an increase of the operative capacity of locomotives. Zhel. dor. transp. 47 no.1:21-22 Ja '65. (MIRA 18:3)

1. Upravleniye Vostochno-Sibirskoy dorogi.

CHESKIDOVA, Ye.

From the exhibition into production. Inform. biul. VDNKH no.10: 13-15 O '64 (MIRA 18:1)

1. Starshiy inzh. otdela tekhnicheskoy informatsii Chelyabinskogo metallurgicheskogo zavoda.

L 21507-66 EWT(1) RO
ACC NR: AP6006417 (A) SOURCE CODE: UR/0317/65/000/011/0018/0021

AUTHOR: Pastak, A. (Engineer; Colonel; Candidate of technical sciences); Choskis, A. (Engineer; Lieutenant colonel)

ORG: none

TITLE: Device for decontaminating military vehicles and equipment

SOURCE: Tekhnika i vooruzheniye, no. 11, 1965, 18-21

TOPIC TAGS: CW decontamination equipment, CBR decontamination kit, chemical decontamination

ABSTRACT: The DK-4 kit for decontaminating weapons and military equipment contains a gas-liquid device (see Fig. 1) and packets of SF-2 decontamination powder. It uses the heat and kinetic energy of exhaust gases produced by four-cycle automotive (armored-carrier) engines to decontaminate, using aqueous solutions of SF-2 powder and, on dry, greaseless surfaces, vacuuming. These gases are bled off at the muffler and directed into an ejector. Gas pressure at the nozzle of the ejector is maintained within 0.1—0.8 gage atmospheres by a regulator valve installed on the end

Card 1/4

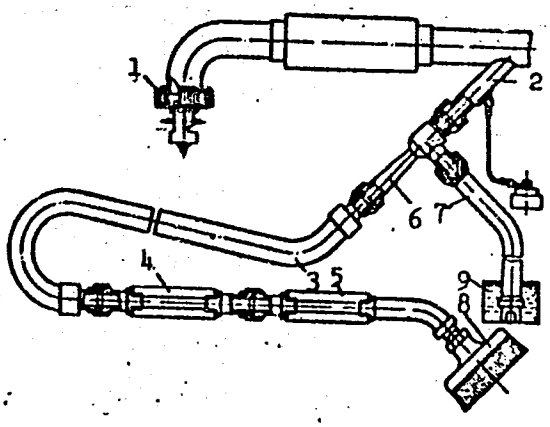


Fig. 1. Device for the gas-liquid decontamination of equipment

1 - Cap with valve; 2 - gas lead-off, gas-liquid hose; 4 - extension; 5 - nozzle; 6 - ejector; 7 - liquid hose; 8 - brush; 9 - container with solution.

of the tail pipe. Due to the rarefaction produced in the gas stream in the ejector, some of the aqueous solution of SF-2 powder is sucked through the hose into the ejector, where it is mixed with hot gases. The heated gas-liquid mixture is then fed through the hose to a nozzle, on the end of which is mounted a conical fitting which forms the stream so as to provide the necessary exhaust velocity.

During the operation of the decontamination device about 1 kg of gases and 1.5 kg of SF-2 solution are expended per minute. The temperature of the stream leaving the nozzle is 55—65°C, and the exhaust velocity is 150—200 m/sec. When using the vacuuming method of decontamination, the vacuum produced in the ejector by the gas flow sucks up dust swept from the surface by a brush into the nozzle, through the hose, and into the ejector. It is carried through a pipe to a container filled with a small quantity of liquid or into a specially prepared hole.

The vehicle's exhaust system must be adapted before the gas-liquid device can be used. On the muffler inlet pipe is mounted a gas take-off, and at the end of the tail pipe is a nipple to which is connected an end cap

L 21507-66
ACC NR: AP6006417

with a valve. In addition, the careful sealing of all joints in the exhaust system is carried out, since there would otherwise not be sufficient gas pressure at the ejector nozzle with the engine operating at moderate speeds. Since it does not use a mechanical drive, and there is therefore no internal friction, the gas-liquid device included in the DK-4 kit features high reliability and simplicity of operation. Orig. art. has: 3 figures.
[ATD PRESS: 4199-F]

SUB CODE: 06 / SUBM DATE: none

Card 4/4 dda

CHESKIS, A. F.

PAVLOVSKAYA, Ye. N. and CHESKIS, A. F. "Hedburs as a carrier of the spirochete of Central Asian recurrent tick typhus under experimental conditions", In the collection: Voprosy krayevoy, obshchev i eksperim. parazitologii, Vol. IV, Moscow, 1949, p. 40-41.

SO: U-4393, 19 August 53, (Letopis 'Zhurnal 'nykh Statey', No.22, 1949).

CHESKIS, A.L.

Vaquez's disease in a 7-year-old child. Pediatriia no.7:84-86 '61. (MIRA 14:9)

1. Iz kafedry propedevtiki detskikh bolezney II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova (zav. - prof. V.A. Vlasov) na baze Detskoy bol'nitsy imeni N.F. Filatova (glavnyy vrach M.N. Kalugina).
(ERYTHREMIA)

CHESKIS, A.L.

Raynaud's disease in a child of 20 months. Vop. okh. mat. i det. 6 no.10:87-88 O '61. (MIRA 14:11)

1. Iz khirurgicheskogo otdeleniya (zav. M.P.Senatova) detskoy bol'nitsy No.9 imeni F.E.Dzerzhinskogo (glavnyy vrach A.N.Kudryashova) Moskvy.

(RAYNAUD'S DISEASE)

CHESKIS, A.L.

Clinical aspects of the abdominal syndrome in rheymatic fever. in children. Sov. med. 26 no.11:115-120 N'62 (MIRA 17:3)

1. Iz khirurgicheskogo (zav. M.P.Senatova) i revmatologicheskogo (zav. A.A. Ivanova) otdeleniy detskoy bol'nitsy No.9 imeni F.E. Dzerzhinskogo (glavnyy vrach A.N.Kudryshova), Moskva.

CHESKIS, A.L.

Differential diagnosis of acute appendicitis and the abdominal syndrome during rheumatic fever in children. Vop.okh.mat. i det. 8 no.2:40-44 F'63. (MIRA 16:7)

1. Iz khirurgicheskogo otdeleniya (zav. M.P.Senatova) Detskoy gorodskoy bol'nitsy no.9 imeni F.E.Dzerzhinskogo (glavnyy vrach A.N.Kudryashova).
(APPENDICITIS) (RHEUMATIC FEVER)
(DIAGNOSIS, DIFFERENTIAL) (CRAMPS)

CHESKIS, A.L.

Some difficulties in early differential diagnosis of rare forms of acute hematogenic osteomyelitis and rheumatic fever in children. Sov.med. 26 no.2:86-90 F'63. (MIRA 16:6)

1. Iz 2-go khirurgicheskogo otdeleniya (zav. M.P.Senatova) Moskovskoy detskoy bol'nitsy imeni F.E. Dzerzhinskogo (glavnyy vrach A.N.Kudryashova).
(OSTEOMYELITIS) (RHEUMATIC FEVER)
(DIAGNOSIS, DIFFERENTIAL)

CHESKIS, A.L.; GROMOVA, R.V.

Abdominal syndrome in rheumatic children. Sovet. med. 27 no.9: 87-92 S'63 (MIRA 17:2)

1. Iz khirurgicheskogo (zav. M.P.Senatova), revmatologicheskogo (zav. A.A.Ivanova) i patologoanatomicheskogo (zav. - R.V.Gromova) otdeleniya Moskovskoy detskoy bol'nitsy No.9 imeni F.E. Dzerzhinskogo (glavnyy vrach A.N.Kudryashova).

CHESKIS, A.I.

Suppurative cysts (lymphangiomas) of the mesentery proper in children. Sov. med. 28 no.7:70-73 Jl '64.
(MIRA 18:8)

1. Khirurgicheskoye otdeleniye (zav. M.P.Senatova) Detskoy gorodskoy bol'nitsy No.9 imeni Dzerzhinskogo (glavnyy vrach A.N. Kudryashova), Moskva.

CHESKIS, G.M., inzh.

Should the cores of new transformers be removed? Energetik 12 no.3:27-28 Mr '64. (MIRA 17:4)

CHESKIS, G.M.

KRAVTSOV, G.L., inzhener; CHESKIS, G.M., inzhener.

Making hollow reinforced concrete casings for wooden transmission line poles in construction yards. Energetik 5 no.7:7-9 Jl '57. (MLRA 10:8)

(Reinforced concrete) (Electric lines--Poles)

CHESKIS, G.M.

Horizontal bar in the room. Zdorov'e 6 no.2:26 F '60. (MIRA 13:5)

(HORIZONTAL BAR)

SERLIN, G.M., arkhitektor; CHESKIS, I.S., inzh.

Remarks on D.V.Artem'ev's article "Three-layer panels for walls of industrial buildings. Prom. stroi. 38 no.9:62-63 '60. (MIRA 13:9)

(Concrete slabs) (Artem'ev, D.V.).

CHESKIS, I.S., inzh.

Modern designs of standard coal preparation plants. Shakht. stroi. 4 no.4:8-11 Ap '60. (MIRA 13:11)

1. Giproshakht.
(Coal preparation)

CHESKIS, I.S., inzh.

Precast prestressed reinforced concrete construction elements of coal preparation plants. Shakht. stroi. 5 no. 1:14-17 Ja '61.
(MIRA 14:2)

1. Giproshakht.
(Precast concrete construction)
(Coal preparation plants)

CHESKIS, I.S., inzh.

Planning mine buildings under permafrost conditions. Shakht. stroi. 6 no.10:6-8 O '62. (MIRA 15:9)

1. Gosudarstvennyy institut po proyektirovaniyu shakhtnogo stroitel'stva kamennougol'noy promyshlennosti.
(Vorkuta Basin--Mine buildings) (Frozen ground)

CHESKIS, Kh.I.

"Weldability of Steel for Cutters of Petroleum Drilling Chisels." Sub 1 Mar 49, Moscow Order of the Labor Red Banner Pwtroleum Inst. imeni Acad I.M. Gubkin.

Summary 82, 18 Dec 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1949. From Vechernyaya Moskva, Jan-Dec 1949.

Cheskis, Kh. I.

KUKMAK, Ye.M.; KURDIN, A.I.; CHESKIS, Kh.I.; YERSHOV, P.R., redaktor; POLOSINA, A.S., tekhnicheskiy redaktor

[Technology of using hard alloys for well-boring bits] Tekhnologiia osnashcheniia tverdymi splavami dolot dlia bureniia. Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, 1954. 171 p.
(Boring machinery) (MLRA 7:10)

CHESKIS Kh. I

93-4-12/20

AUTHOR: Cheskis, Kh. I., Zakharochkin, L. D.

TITLE: Use of Electrically Welded Tubes in the Petroleum Industry (O primenenii elektrosvarnykh trub v neftyanoy promyshlennosti)

PERIODICAL: Neftyanoye Khozyaystvo, Nr 4, April, 1957, pp.47-50 (USSR)

ABSTRACT: The article deals with research on electrically welded (resistance welding method) tubes manufactured by the plant imeni Lenin (tube dimensions - 152 x 5 and 114 x 5 mm) and the Moscow tube plant (tube diameters: 22, 38 and 51 mm). The 152 x 5 mm tubes were made of St.2 steel, the 114 x 5 mm of St. 3 steel and those with 22, 38 and 51 mm diameters of steel "marki 15". The tubes have not been heat treated in the factory. Testing of the macrostructure of the welded seams have revealed no non-fusion. Tensil strength tests were run on 700 mm-long tube samples (some with a transverse welding seam in the middle) which were subjected to pressure high enough to rupture them. Hydraulic tests revealed no

Card 1/5

Use of Electrically Welded Tubes in the Petroleum Industry.

failures along the longitudinal seams. Ruptures appeared at a distance of 27-35 mm from the longitudinal seam. Table 1 shows the results of tests performed on 114 x 5 and 152 x 5 mm tubes at room temperature. Table 2 shows the tensil strength and relative elongation of the tubes and the tensil strength of the welded joints at seven different temperatures, ranging from 20 to 450°C. Corrosion tests were conducted on welded tube samples, 22, 28 and 51 mm in diameter and 40 mm in length. Tube samples of larger diameter were 30 x 40 mm. They were cut out at the welding seam and at 90 and 180° angles to the welding seam. The samples were subjected to 1% aqueous hydrochloric acid at 20°C for 400 hours and to 1% aqueous hydrochloric acid saturated with hydrogen sulfide, at 20°C for 100 hours. Test results showed (Table 3 and 4) that in all tubes samples (not heat treated) the welding seam zone had a lower corrosion stability than the basic metal. As a result of corrosion the loss of weight in the case of

Use of Electrically Welded Tubes in the Petroleum Industry. (Contd)

tubes 152 x 5 mm with welding seam was 1.7 - 2.6 greater than the corresponding loss of weight in samples of the basic metal. Tubes with thin walls were eaten through along the welding seam (Fig. 2a). It was assumed that uneven corrosion stability of the metal along the perimeter of the tube was due to structural heterogeneity of the metal and that by equalizing the structure by heat treatment its chemical stability would be improved. To test the validity of this assumption, the tube samples were heat treated at 690-710°C and at 900-920°C and subsequently tested with the above mentioned solutions for corrosion stability. Test results (Tables 3 and 4) showed that heat treatment increased considerably the corrosion stability of the welding seam zone. The character of the corrosion was more uniform without visible impairment of the butt weld (Fig. 2b). A wide application of these tubes depends also on how readily they can be bent. Bending experiments with tubes, 114 x 5 mm and 152 x 5 mm, 1.7-1.8 m long and filled with sand, were conducted at the Moscow refinery. The bending curve was 4-5 times the diameter of the tube. The longitudinal seam was located either on the expanded, compressed or neutral side of the

Use of Electrically Welded Tubes in the Petroleum Industry. (Contd)

flexed tube. Hydraulic tests revealed no failures in the basic metal or in the seams. Flared, heat treated tubes (25 x 2.5 and 33 x 1.5 mm) were also tested (at 25 atmospheres) at the Moscow refinery. Tests showed no cracks in the welding seam. The author concludes that: 1) electrically welded tubes (resistance method) are as strong as seamless tubes and can be substituted for them; 2) electrically welded tubes, not heat treated, have low corrosion stability which can be greatly improved by heat treatment; 3) in the petroleum industry electrically welded tubes can be used to transport petroleum and can serve in refineries for transfer lines, for heat exchangers and condenser-coolers, provided the temperature does not rise above 375°C; in the equipment 4) electrically welded tubes of large diameter made of St. 2 steel can be used without prior heat treatment, to transport non-sulfurous oil as well as hot and cold water; 5) electrically welded tubes made of St.2 and St.3 steel, when used for corrosion crudes,

Use of Electrically Welded Tubes in the Petroleum Industry. (Contd)

should be heat treated; 6) electrically welded tubes used in heat exchanger and condenser equipment should be heat treated preferably at the manufacturing plants. Since the ends of heat exchanger tubes are flared, they should be either drawn or reamed for a distance of 100 mm from the end.

Card 5/5

AVAILABLE: Library of Congress.

CHESKIS, Kh. I.

129-4-4/12

AUTHORS: Cheskis, Kh. I., Candidate of Technical Sciences, and Vol'fson, S. I., Candidate of Technical Sciences.

TITLE: Influence of long duration heating on the structure and the properties of Type 18-8 steels. (Vliyaniye dlitel'nogo nagreva na strukturu i svoystva staley tipa 18-8).

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, No.4, pp. 16-25 (USSR).

ABSTRACT: The authors investigated systematically the influence of long duration heating at 500 to 900°C on the structure and the properties of 18-8 type standard steels. The specimens of the studied steels were annealed for various durations (up to 10 000 hours) at 500 to 900°C in electric furnaces and the temperature was maintained automatically with an accuracy of ± 5°C. For some grades of steel the influence was also studied of repeated heating and cooling on the degree of transformation. For investigating the structural transformations and the changes of the mechanical and physical properties metallographic methods were used as well as determination of the magnetic saturation and of the specific electric resistance, X-ray-structural analysis

Card 1/5

Influence of long duration heating on the structure and the properties of Type 18-8 steels.

detail and the following conclusions are arrived at:
1. The intensity of austenite transformation in the steels 0X18H9, 1X18H9 and 2X18H9 during holding over long periods in the temperature range 500 to 900°C and also the character of the separating out phases depends on the temperature, the holding time and the carbon content in the steel.
2. In steels with low carbon contents, of the order of 0.07% (0X18H9), the transformation takes place as a result of formation of the α-phase and of carbides and these processes are completed only at the grain boundaries.
3. In steels with a comparatively high carbon content, of the order of 0.18% (2X18H9), the transformations take place fundamentally as a result of separation of the carbides. Holding for 3500 hours at 700°C and holding for shorter durations at 800 and 900°C brings about transformations throughout the entire grain, which is not the case for steel with lower carbon contents.
4. From the point of view of the character of the transformations, the steel 1X18H9 occupies an intermediate position between the steels 0X18H9 and 2X18H9 but it is nearer in its behaviour to 0X18H9 steel.

Card 3/5

Influence of long duration heating on the structure and the properties of Type 18-8 steels.

5. In addition to austenite decomposition, a diffusion of chromium from the more enriched parts of the grain into the impoverished parts and a partial transformation of the α-phase into the γ-phase seems to take place in 18-8 type steels. Therefore, on increasing the holding time or the temperature, the magnetic saturation drops. With increasing temperature and holding time carbide coagulations are observed.
6. The Cr-Ni-Mn austenite of the steel X13H4Г9 is less stable than the Cr-Ni austenite of the steel 18-8; the transformations taking place at 600°C lead to a sharp decrease of the impact strength of the steel X13H4Г9.
7. The steels 1X18H9T and X18H11Б become transformed as a result of long duration holding at 500 to 800°C; the nature of these transformations differs from that of transformations in steels without Ti or Nb.
8. The steel 1X18H9T contains in its initial state and after annealing at 500 to 700°C a certain amount of ferrite in addition to the carbides (and in some cases also a σ-phase). The austenite of the steel X18H11Б containing 12% Ni is more stable and does not become

Card 4/5

Influence of long duration heating on the structure and the properties of Type 18-8 steels.

transformed into ferrite during heating.
9. The structural transformations in type 18-8 steel lead to a strong drop of the impact strength and to a certain reduction of the plastic properties during static fracture. The decrease in impact strength and ductility of steels containing Ti and Nb is more pronounced than in similar steels not containing carbide forming admixtures.
There are 7 figures, 6 tables and 8 references - 3 Russian, 5 English.

ASSOCIATION: **Gipronefteмash.**

AVAILABLE: Library of Congress.

Card 5/5

CHESKIS, Kh. I.

125-58-5-3/13

AUTHORS: Cheskis, Kh.I., and Vol'fson, S.I.

TITLE: Intercrystalline Corrosion of Steel "1Kh18N9T"-Welds, as a Result of Work at High Temperatures (Mezhkristallitnaya korroziya svarnykh shvov stali 1Kh18N9T v rezul'tate raboty pri povyshennykh temperaturakh)

PERIODICAL: Avtomaticheskaya Svarka, 1958, Nr 5, pp 18-24 (USSR)

ABSTRACT: The article deals with intercrystalline corrosion at joints, welded by electrodes "ZIO - 3" of the type "EA1B" on steel "1Kh18N9T" (used for vessels and pipes in the petroleum processing and other branches of industry). The following conclusions were made. 1) The welds do not develop intercrystalline corrosion after welding, hardening and heating for 2 hours at 650°C. 2) Long heating at 500-600° makes both the welds and the base metal prone to intercrystalline corrosion, and this tendency increases with an increased duration of heating from 100 to 5,000 hrs. With heating at 650°, corrosion-proneness becomes less, and finally disappears as the duration of heating increases. 3) Welds subjected to stabilizing-annealing stay corrosion-proof after long heating (up to

Card 1/2

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000308720013-7

Intercrystalline Corrosion of Steel "1Kh18N9T"-Welds, as a Result of Work at High Temperatures

5,000 hrs) at 550° when the relation $\left[\frac{Ti}{C - 0.03}\right]$ in the steel exceeds 6.2, and $\frac{Nb}{C}$ is $\geq 9 \div 10$. 4) Stabilized-annealing must be always recommended for welds on steel "1Kh18N9T" (for work at high temperatures in mediums which can cause intercrystalline corrosion) irrespective of the treatment of the pipes, i.e. if the pipes were stabilization-annealed or hardened. The following persons participated in the experiments: V.A. Nikiforov, L.S. Livshits, and L.D. Zakharochkin. There are 3 figures and 2 tables.

ASSOCIATION: Giproneftemash

SUBMITTED: November 10, 1957

AVAILABLE: Library of Congress

CHESKIS, KH. I

PHASE I BOOK EXPLOITATION SOV/4535

Vsesoyuznyy sovet nauchno-tekhnicheskikh obshchestv

Mezhkristallitnaya korroziya i korroziya metallov v napryazhennom sostoyanii (Intercrystalline and Stress Corrosion of Metals) Moscow, Mashgiz, 1960. 358 p. 3,000 copies printed.

Ed.: I.A. Levin, Candidate of Technical Sciences; Ed. of Publishing House: I.I. Lesnichenko, Engineer; Tech. Ed.: V.D. El'kind; Managing Ed. for Literature on Metalworking and Instrument Making (Mashgiz): V.V. Rzhavinskiy, Engineer; Editorial Board: I.A. Levin, Candidate of Technical Sciences (Chairman), V.P. Batrakov, Candidate of Technical Sciences, V.M. Nikiforova, Candidate of Technical Sciences, and A.V. Turkovskaya, Candidate of Technical Sciences.

PURPOSE: This collection of articles is intended for technical personnel concerned with problems of corrosion of metals.

COVERAGE: The collection contains discussions of intercrystalline corrosion of stainless steels and stress corrosion of carbon steels, low-alloy and stainless steels, and light-weight and nonferrous alloys. The tendency of steels of

Card ~~1/9~~

various composition and systems to corrode under certain conditions is discussed and the nature of corrosion and corrosion cracking is analyzed. No personalities are mentioned. Most of the articles are accompanied by bibliographic references, the majority of which are Soviet.

TABLE OF CONTENTS:

89583
S/184/60/000/005/003/021
A104/A026

18.8300

AUTHORS: Cheskis, Kh.I.; Vol'fson, S.I.; - Candidates of Technical Sciences

TITLE: Intercrystalline Corrosion of Х18Н9Т-л (Kh18N9T-l) Cast Steel

PERIODICAL: Khimicheskoye mashinostroyeniye, 1960, No. 5, pp. 34 - 37

TEXT: Test results concerning the influence of long-time heating on the intercrystalline corrosion tendency of cast steels are given. Tested were Kh18N9T-l steels containing titanium and carbon at a ratio varying from 4.5 to 13 [Ti : (C - 0.03)] and 18-12 steels with a higher content of nickel. Samples were subjected to two types of thermal processing, i.e., hardening at 1,050 - 1,100°C in water and hardening followed by 3-h stabilization annealing at 850 - 870°C. Preliminary tests revealed that the conventional method of bending 4-mm cast steel samples is unsatisfactory, making it difficult to determine which fractures were caused by intercrystalline corrosion and which by the reduced plasticity of the metal. Therefore, only samples of 1-mm thickness were used in final tests, a brief description of which is given. Classification of samples as to their tendency to intercrystalline corrosion was based on losses of metal sounding, bending tests and changes in electric resistance. Results of tests on 1Kh18N9T-l steel containing 10% ferrite and 1Х18Н12Б1 (1Kh18N12B1) steel contain-

Card 1/2

Intercrystalline Corrosion of Х18Н9Т-Л (Kh18N9T-1) Cast Steel

ing 3% ferrite are explained. R. Scherer states in the periodical "Archiv für das Eisenhüttenwesen", 1939, No. 1 (Ref. 3) that the presence of ferrite in 18-8 chromium-nickel steel renders the steel immune to intercrystalline corrosion. Tests carried out in the Institut svarki Akademii nauk USSR (Welding Institute of the Academy of Sciences of the UkrSSR) showed that addition of ferrite forming fillers (Si, V, Al) resulting in an austenite-ferrite structure of joint metal, rapidly increase the "immunity" of welded joints, according to B.I. Medovan (Ref. 4). Present tests proved the contrary, i.e., that even a content of 20% ferrite and high relative contents of titanium and carbon do not eliminate the tendency toward intercrystalline corrosion of heated 18-8T steel. It was proved that the stabilization annealing of Kh18N9T steel with Ti : (C - 0.03) $\geq$ 6.6 considerably increases its intercrystalline corrosion resistance at 500 - 600°C, though not rendering it completely immune as in the case of rolled steel (Ref. 5, Kh.I. Cheskis, S.I. Vol'fson and Yu.S. Medvedev). Kh18N9T-1 steel used at increased temperatures in mediums causing intercrystalline corrosion should be subjected to austenitic hardening and stabilization annealing at which the relation of Ti : : (C - 0.03) should not be lower than 6.6 - 70. There are 2 figures, 2 tables and 5 references: 1 German, 1 Polish and 3 Soviet.